(54) Power converting device with inverter circuitry for driving multiple-phase variable-speed motor.

(57) A power conversion device (10) of the inverter type for three-phase DC motor (12) includes three parallel pairs of output transistors (Q1 to Q6) between a power supply voltage (20) and the ground potential (22). These pairs provide three upper-stage transistors (Q1, Q3, Q5) and three lower-stage transistors (Q2, Q4, Q6) with diodes (D1 to D6) being coupled thereto. Drivers (24) are connected to the transistors (Q) respectively. A capacitor (C1) for each upper-stage driver (24-1) has an electrode coupled to the power supply voltage and the other electrode coupled to the ground through a corresponding lower-stage transistor (Q2). A controller (30) controls the upper- and lower-stage drivers (24) in response to a pulse width modulation (PWM) signal (Sp) generated by a PWM generator (32) to represent a desired motor rotation speed. The upper-stage transistors (Q1, Q3, Q5) are PWM-driven so that each one turns on and off repeatedly during a 120-degree electrical angle period. While one upper-stage transistor (Q1) is PWM-driven during a 120-degree period, a corresponding lower-stage transistor (Q2) turns on in response to a reverse-phased pulse at the beginning of this period, thereby charging the capacitor (C1).
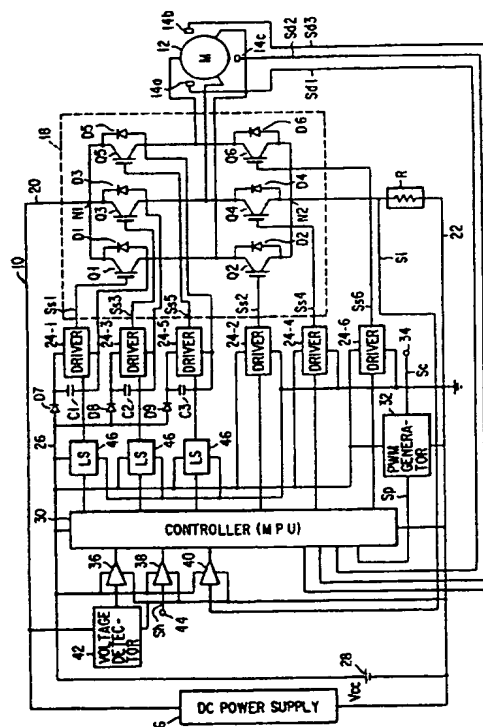
FIG. 1

EP 0 521 709 A3

European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 30 6080

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	EDN ELECTRICAL DESIGN NEWS vol. 32, no. 18, 3 September 1987, NEWTON, MASSACHUSETTS US pages 227 - 234 DANIEL ARTUSI AND WARREN SCHULTZ 'Solid-state devices ease task of designing brushless dc motors' * page 228 - page 229; figure 1 * * page 232 - page 234; figures 4,5 *	1,2,5,7, 8,10-14	H02P6/02 H02M7/538
A	IEEE TRANSACTIONS ON POWER ELECTRONICS vol. 6, no. 1, January 1991, NEW YORK US pages 118 - 126 , XP000175326 THOMAS M. JAHNS ET AL. 'Integrated Current Regulation for a Brushless ECM Drive' * page 118 - page 120; figures 1-3 *	1-4,7-9, 12,14	
A	ELECTRONIQUE RADIO PLANS no. 523, June 1991, PARIS FR pages 89 - 93 , XP000230884 R.LAHAYE 'La série SP-600, Circuits HT de commande en demi-pont' * page 90 - page 91 * * page 93 * * figures 2,9 *	1,8	TECHNICAL FIELDS SEARCHED (Int. Cl.5) H02M H02P

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	12 MARCH 1993	BOURBON R.

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